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Plein & Baus Elektronik

Werk für
Industrie-
elektronik

Nuklear-
elektronik

Regelungs-
technik

VME Mini Crate 195

Operation Instructions

General Remarks

The only purpose of this manual is a description of the product. It must not be interpreted as a declaration of conformity for this product including the product and software.

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Mains Voltage and Connection

The Power supplies are equipped with a "World"- mains input, which works properly form 94VAC up to 264VAC and within a frequency range of 47 to 63Hz.

Before connecting to the mains please double-check correspondence.

The mains input connection at the power supply side is done with a 3-pin Hirschmann connector (input current max. 16 A) or power terminals.

Hirschmann Pin No.	Signal	Description	Color of the Wire
Pin 1	L	Phase	black or brown
Pin 2	N	Return, Neutral	blue
Pin 3		not connected	
Earth	PE	Protective Earth	green/yellow

Safety

After connecting the Power box to the mains, the mains input module is powered permanently. Filter and storage capacitors of the power factor correction module are charged with about **400VDC**. The DC-On-Signal as well as a power switch at control board (if any installed) operates as a DC on/off switch only and not as a mains breaker. **Therefore it becomes dangerous if the box cover is open. In this case a lot of components on high voltage potential get touchable!**

Before starting any kind of work inside the power box remove the unit from mains and wait a couple of minutes with your activities! Discharge the primary DC Filter-capacitors by use of a well isolated 22 ohm 10W resistor.

Cooling

VME Mini Crates are equipped with temperature probes to protect the unit against severe damages. It cannot be guaranteed that inserted VME modules have been protected sufficient in the same way if

1. **The fan speed is reduced to lower or minimum speed**

2. **The air ingress or/and outlet holes are blocked**

3. **Front and Transition area is open and the airflow though modules is interrupted**

Declaration of Conformity

Art. 10.2 of 89/336 and 89/392 / ECC

W-IE-NE-R

Plein & Baus GmbH

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declare under our own responsibility that the product

Vmini 195 /   Vmini 174

Items: 0376.xxxx

to which this declaration relates, is in conformity with the following standards or normative documents :

1.	**EN 61 000-6-3:2001**	**Störaussendung EMA [RF emission]**
	EN 55 022:1998 + Corr:2001 + A1:2000 Kl. B	Störspannung [conducted noise]
	EN 55 022:1998 + Corr:2001 + A1:2000 Kl. B	Störfeldstärke [radiated noise]
	EN 61 000-3-2:2001	Oberschwingungen [harmonics]
	EN 61 000-3-3:1995 +Corr:1997 +A1:2001	Spannungsschwankungen [flicker]
2.	**EN 61 000-6-2:2001**	**Störfestigkeit EMB [immunity]**
	EN 61 000-4-6:1996 + A1:2001	HF-Einströmung [injected HF currents]
	EN 61 000-4-3:1996 + A1:1998 + A2:2001	HF-Felder [radiated HF fields] incl. ”900MHz”
	EN 61 000-4-4:1995 + A1:2001	Burst
	EN 61 000-4-5:1995 + A1:2001	Surge
	EN 61 000-4-11:1994 + A1:2000	Spannungs-Variationen [voltage variations]
	EN 61 000-4-2:1995 + A1:1998 + A2:2001	ESD

Conditions:

This unit is not a final product and is foreseen for use inside a closed cabinet. The supplying of loads over long distances (>3m) needs possibly additional RF rejection hardware to get in conformity of the definition.   Admitted for powering by all mains.

Name and signature of authorized person

Juergen Baus

Techn. Director

Place and Date

March. 2006

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1　　Versions

Available versions of VME Minicrate 195:

Type	Part no.	Description
VME195	0376.1195	5U high 19" Box, **9Slot Backplane VME,** J1/J2, Power:　　　　　+5V/45A, +/-12V/11,5A
VME195-C	0376.3195	5U high 19" Box, **9Slot Backplane CERN VME430,** J1/Jaux/J2, Power:　　　　　+5V/45A, +/-12V/11,5A, -5.2V/45A, -2V/22A
VME195-x	0376.I195B	5U high 19" Box, **9Slot Backplane VME64x,** J1/J2, Power:　　　　　+5V/45A, +/-12V/11,5A , 3,3V/45A
VME195-xP0	0376.J195B	5U high 19" Box, **9Slot Backplane VME64x,** J1/J0/J2, Power:　　　　　+5V/45A, +/-12V/11,5A , 3,3V/45A

Optionally the 64x versions can be equipped with 48V additionally. Versions with higher output currents and/or different output voltages are available upon request.

2　　VMINI 195 Operation

After the VMINI 195 has been switched on by pushing the "Power" switch up, the main operation modes can be selected by pushing the "Mode Select" switch up or down.

Many main operation modes do have one or more submenus, which can be accessed by a special procedure.

You will use the following switches of the Vmini 195:

Symbol	Description	Remarks
P▲	Push "Power" switch up (ON)	**Main operation mode:** Switch the crate on. **Submenu:** OK button. Used to enter the selected submenu, request to change a value, accept the changes.
P▼	Push "Power" switch down (OFF)	**Main operation mode:** Switch the crate off. **Submenu:** CANCEL button. Used to leave a submenu, discard the changes.
M▲	Push "Mode Select" switch up	**Main operation mode:** Select the next operation mode. **Submenu:** Change the selected item to the next possible state.
M▼	Push "Mode Select" switch down	**Main operation mode:** Select the previous operation mode. **Submenu:** Change the selected item to the previous

Symbol	Description	Remarks
		possible state.

By default the IP address is set to 0.0.0.0. This means that an IP address is requested via DHCP after connection to a network. By changing the IP address to another value DHCP is disabled and the IP address becomes static.

The following example describes the detailed steps to change the IP gateway address of the Crate:

Description	*Switch*	*Display*
		two lines: displayed alternating *alternate background color: blinking*
switch the crate on	P▲	+5V 5.01V 1.2A
select the requested main operation mode	M▲ or M▼ (until right mode is displayed)	TCPIP: no link
enter submenu	M▲ (push and hold), P▲	Config: Wait
	hold both switches up	Config: Wait...
	after 4 seconds you can	Config: Ready !
	release the switches	TCPIP Address 192.168.91.80
Select submenu "TCPIP Gateway"	M▲ or M▼ (until right menu is displayed)	TCPIP Gateway 192.168.91.94
Enter this menu	P▲	192.168.91.94
Change the value	M▲ or M▼	196.168.91.94
Accept change, to next item	P▲	196.168.91.94
Accept change, to next item	P▲	196.168.91.94
Accept change, to next item	P▲	196.168.91.94
Ready, back to submenu selection	P▲	TCPIP Gateway 196.168.91.94
Ready, leave submenu	M▼	TCPIP: no link

3   Main operation modes and associated submenus

Operation Mode	*Submenu*	*Display*
Display voltage and current of the selected output channel		+5V 5.01V 72.A
	Change of the current limit	+5V Ilim 115.A
	Fine adjustment of the output voltage	+5V Uadj +50%
	Change the output voltage (coarse)	+5V Unom 5.00V
	Change the overvoltage protection threshold (crowbar, measured at the power supply outputs)	+5V OVP 6.00V
	Change of the overcurrent switch-off threshold	+5V IOff 110.A
	Change of the undervoltage switch-off threshold	+5V Umin 4.50V
	Change of the overvoltage switch-off threshold	+5V Umax 5.50V
Display the total power at the load		
Display the CANbus address		
Display the TCP/IP connection state Possible values & symbols are: no link (no cable connected) 10M (connected to 10M network) 100M (connected to 100M network) HD (half duplex) FD (full duplex) ↓, ↑, ↕ (Frame received, transmitted, both)		Ethernet 100M FD
	Change the TCP/IP address	TCPIP Address 192.168.91.80
	Change the TCP/IP subnet mask	TCPIP SubnetMask 255.255.255.224
	Change the TCP/IP gateway address	TCPIP Gateway 192.168.91.94

Operation Mode	Submenu	Display
	Allow writes (e.g. switch on/off) via the web server	HTTP:read/write
	Change TCP/IP negotiation settings	TCPIPnegotiation AutoNegotiation
	Display of the Ethernet hardware address (MAC). This address is written at the type plate, too.	TCPIP MAC Addres 0050-C22D-C231
	Change the TCP/IP port of the web server	HTTP Port 80
	Change the TCP/IP port of the TELNET server	TELNET Port 23
	Change the TCP/IP port of the SNMP server	SNMP Port 161
	Restore the default SNMP settings (community strings)	SNMP Default No
Display the RS232 interface state		
Display the fan rotation speed		
	Change the time for which the fans will continue running after switching the power supply off.	
	Display the number of supervised fans	
Display the internal temperature (inlet air temperature)		
	Select the temperature unit (Celsius or Farenheit)	
	Functionality of the "Fan Auto Off" switch	
	Hide the display of the internal temperature	
Display the BIN sensor temperature		
	Change the WARNIG threshold temperature (fans will switch to full speed)	
	Change the ERROR threshold temperature (power supply is switched off)	

Operation Mode	Submenu	Display
Display the fan operating time		
Display the power supply operating time		

3.1.1 Additional temperature sensors

Optionally installed temperature sensor(s), measuring the exhaust air, allows to switch the fan to stop. That will be achieved by keeping pushed the FAN SPEED button to lower speed for about 10 seconds.

Also the sensor(s) will

- accelerate the fan speed to the maximum if the first (FanUp) programmed temperature threshold exceeds (default: 45°C) . During the out coming cooling air is above these thresholds, adjustment to lower fan turns is disabled, until the exhaust temperature is below the limits again.

- switch off the power supply if the second (PsOff) programmed temperature threshold exceeds (default: disabled) .

The sensors are placed normally above selected slots at the bin. In combination with EC fan trays these sensors can substitute the function of the LX fan fail circuit, partially.

3.1.2 Information by Front Panel LEDs

AC POWER	green large LED if *POWER* is on
STATUS	green LED if all voltages are within the limit
FAN FAIL	yellow LED if a fan failure is recognized
OVERHEAT	yellow LED if an overheat in the power supply occurs
SYS FAIL	red LED if VME-bus system generates the *SYSFAIL* signal (system failure)
FAN SPEED	Red LED if fan speed below 100%
AUTO OFF	red LED indicates DC cut off disabled in case of fan fail, remote warning only.

3.1.3 Pin Assignment **Jaux** of Special VME 430-Bus (CERN)

Pin Number	Row A	Row B	Row C
01	SN1	GND	SN2
02	SN3	GND	SN4
03	SN5	GND	GND
04	CK*	GND	CK
05	SG*	GND	SG
06	CL*	GND	CL
07	-2 V	-2 V	-2 V
08	- 15 V	CE	+ 15 V
09	- 5,2 V	-5,2 V	- 5,2V
10	- 5,2 V	- 5,2 V	- 5,2V

3.1.3.1   Terminology and Signal Identification of Jaux

SN1... SN5, Binary coded slot No. lines, Geographical address

Slot Number	SN1	SN2	SN3	SN4	SN5
01	NC	GND	GND	GND	GND
02	GND	NC	GND	GND	GND
03	NC	NC	GND	GND	GND
04	GND	GND	NC	GND	GND
05	NC*	GND	NC	GND	GND
06	GND	NC	NC	GND	GND
19	NC	NC	GND	GND	NC
20	GND	GND	NC	GND	NC
21	NC	GND	NC	GND	NC

NC = No Connection (represents H- level, generated by 5k6 resistor on VME modul for TTL, e.g.)

CK, SG and CL signals, Clean Earth

CK, Clock signal, bussed differential line terminated on both sides of the backplane (2 resistors to ground and 1 resistor in between the two lines according to the impedance
.

CK   positive logic
CK*   negative logic

SG, Start / Stop Gate, bussed differential line terminated like CK lines.

SG   positive logic
SG*   negative logic

CL, Clear, bussed differential line terminated like CK lines.

CL   positive logic
CL*   negative logic

CE, Clean Earth , unbussed line without termination.

4   Remot Control Pin Description

4.1   CAN-Bus (X1, X2)

RJ45 Socket	Pin	Signal	Comment
	1	CAN-H	
	2	CAN-L	
	3	GND	
	4	n.c.	
	5	n.c.	
	6	reserved	
	7	GND	
	8	n.c.	

This is the standard CIA pinning. Both CANbus connectors are wired in parallel, so it's easy to connect many crates in a daisy-chain.

4.2   RS232 (X3)

RJ45 Socket	Pin	Signal	Comment
	1	n.c.	
	2	n.c.	
	3	n.c.	
	4	GND	
	5	RXD	Output
	6	TXD	Input
	7	CTS	Output
	8	RTS	Input

This is the standard RS232D DCE pinning. Connection to DTE (e.g. computer) with a 1:1-cable.

4.3 Ethernet (X4)

RJ45 Socket	Pin	Signal	Comment
	1	TX+	
	2	TX-	
	3	RX+	
	4	GND 1	75 Ohm
	5	GND 1	
	6	RX-	
	7	GND 2	75 Ohm
	8	GND 2	

This is the standard NIC configuration. **You need a** 1:1-cable to connect a to a HUB, or a **cross-over cable to connect to** another NIC (e.g. **a computer**). *There is no automatic signal crossing like with some routers*.

4.3.1 CAN Transmission Speed Index

Index	Max. Distance	Bit Rate	Type
0	10 m	1.6 Mbit/s	high- speed
1	40 m	1.0 Mbit/s	
2	130 m	500 kbit/s	(needs termination)
3	270 m	250 kbit/s	
4	530 m	125 kbit/s	
5	620 m	100 kbit/s	low-speed
6	1.300m	50 kbit/s	
7	3.300 m	20 kbit/s	
8	6.700 m	10 kbit/s	
9	10.000 m	5 kbit/s	

For software protocol see separate manual No. *00183

APPENDIX A: Technical Details

Module cage formats	Types 195/195-C: 6U / 160mm, VME standard, Transition 6U / 160mm
	Types 195-x/-xP0: 6U / 160mm, VME64x standard, Transition 6U / 80mm
Crate Size	9 Slot, 19" or 446mm x 5U (221mm) x 485mm depth Tower: 446mm height / Desktop: 446mm width (height + rubber feet)
Mains input	auto range, 90...265VAC, 47-63Hz, 1 x 10A slow blow fuse
inrush current: input current:	limited by cold-start-circuit, max. 20A CE acc. to EN 61000-3-2, IEC 555 power. fact. 0,95 (230VAC)
Isolation Inp.-outp.	CE acc. to EN 60950, ISO 380, VDE 0805, UL 1950, C22.2.950
Regulation static:	0%...100% load, +/-15% mains <15mV
Regulation dynamic:	+/-25% load <100mV
Recovery time:	+/-25% load within +-1% : 1.0ms / within +-0.1% : 0.2ms
Noise and ripple:	< 15mVpp, typical <10mVpp (0-20MHz), 3mVrms (0-2MHz)
EMC compatibility:	EN 61 000-6-3:2001
	EN 55 022:1998 + Corr:2001 + A1:2000 Class B
EMA (RF emission) CE	EN 55 022:1998 + Corr:2001 + A1:2000 Class B
	EN 61 000-3-2:2001
	EN 61 000-3-3:1995 +Corr:1997 +A1:2001
	EN 61 000-6-2:2001
	EN 61 000-4-6:1996 + A1:2001
	EN 61 000-4-3:1996 + A1:1998 + A2:2001
EMB (RF immunity) CE	EN 61 000-4-4:1995 + A1:2001
	EN 61 000-4-5:1995 + A1:2001
	EN 61 000-4-11:1994 + A1:2000
	EN 61 000-4-2:1995 + A1:1998 + A2:2001
Operation:	0...40°C without derating, rel. humidit y 30...80%, non condensing atmospheric pressure 70...110kPa, >85kPa for 600W continuous power, Storage: -30°C up to 85°C
Temperature coefficient:	< 0,2% / 10K
Stability:	10mV or 0,1% within 24 hours 50mV or 1,0% within 6 months
Current limits:	programmable!
Overvoltage protection:	trip off adjusted to 125% of nominal voltage each output
DC Off (trip off):	within 5ms if +5%, -2,5% deviation from adjusted nominal values, after overload, overheat, over voltage, under voltage (bad status) and fan fail trip off voltages and currents adjustable, processor controlled
Internal temperature limits:	Cut off: 110°C heat sink, 70°C ambient, automatically selecting maximum fan speed if air above VME modules >45°C
Efficiency:	ca. 80%
Cooling Airflow:	340 m³/h (at maximum fan speed)
M T B F:	Blower: >35 000 h (40°C), >65 000 h (25°C) Electronics: >85 000 h (40°C ambient temperature)

Crate Version	+5V	+/-12V	-2V	-5.2V	3.3V	max. Power
VME 195	45A	11,5A/11,5A	-	-		650W
VME 195-C	45A	11,5A/11,5A	22A	45A	-	650W
VME 195-x	45A	11,5A/11,5A	-	-	45A	650W
VME 195-xP0	45A	11,5A/11,5A	-		45A	650W

Optionally the 64x versions can be equipped with 48V additionally. Versions with higher output currents and/or different output voltages are available upon request.